

### REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-8 remain pending in the application subsequent to entry of this Amendment.

It is proposed to amend claim 1 to address issues raised of lack of clarity directed to claim 1 and to also more clearly define the invention.

#### Amendments to the Claims

Claim 1 is amended to agree with the description of the invention to reflect the anatase crystal titanium oxide particles (A) and the colloidal silica particles (B) are dispersed in the photocatalyst liquid. As for the anatase crystal particles (A) *see* page 11, lines 1-4 which reads:

“While the above anatase crystal titanium oxide particles can be produced by a conventionally known method, advantageously, they are used in the form of titanium oxide sol for homogeneously dispersing them in a coating liquid.”

and as for the colloidal silica particles (B) *see* the sentence bridging pages 11 to 12 which reads:

“Colloidal silica is a product in the form of colloid, prepared by dispersing high-purity silicon dioxide (SiO<sub>2</sub>) in an aqueous medium, and it has an average particle diameter generally in the range of 1 to 200 nm, preferably in the range of 5 to 50 nm.”

Binder component (C) is dissolved in the photocatalyst coating liquid.

The presence of a solvent, implicit in claim 1, is now expressly stated as component (D) and provides antecedent basis for the solvents specifically identified in dependent claims 2 and 3. Solvents are discussed on pages 13-14 of the description of the invention.

#### Response to 35 USC §112, Paragraph 2 Rejection

It is pointed out that Claim 1 is regarded as being indefinite since there is no definition of n and m in “TiO<sub>x</sub>C<sub>n</sub>H<sub>m</sub>” in claim 1. The present specification, page 13, 2nd paragraph, describes only the formula of TiO<sub>x</sub>C<sub>n</sub>H<sub>m</sub>, and n and m in the formula are not defined. The formula TiO<sub>x</sub>C<sub>n</sub>H<sub>m</sub> is used to show that the product, that is the hydrolysis condensate, obtained by hydrolysis-condensation of titanium alkoxide, is not TiO<sub>2</sub> but an intermediate between titanium alkoxide and TiO<sub>2</sub> and has organic unreacted groups (generically identified as -C<sub>n</sub>H<sub>m</sub>). In order to advance prosecution reference to TiO<sub>x</sub>C<sub>n</sub>H<sub>m</sub> has been deleted as it is unnecessary.

Claim 1 as previously presented states “(C) a binder formed of a hydrolysis-condensate of a titanium alkoxide and having the structure of  $\text{TiO}_x\text{C}_n\text{H}_m$  and containing organic unreacted groups”. So even with “and having the structure of  $\text{TiO}_x\text{C}_n\text{H}_m$ ” deleted from claim 1, the claim is understandable since “containing organic unreacted groups” remains.

In addition, in the event the expression “a hydrolysis-condensate of a titanium alkoxide and containing organic unreacted groups” might be misinterpreted to mean that the titanium alkoxide contains organic unreacted groups, this passage on page 10, line 3, has been revised to read: “(C) a binder formed of a hydrolysis-condensate of a titanium alkoxide, the hydrolysis-condensate containing organic unreacted groups” and to include mention of the solvent (D) to be consistent with claim 1 as above amended.

The Examiner also points out that claim 1 is indefinite since “fine” in “fine particles” is a relative term. “Fine” is above deleted from claim 1.

Response to 35 USC§103(a) Rejection

Of the present claims 1 to 8, only claim 1 is an independent claim. Applicants will explain the patentability of the invention of claim 1 in the remarks that follow.

In the office Action, it is stated that claim 1 is obvious over Yamazaki US Pat. No. 6,071,606 (“Yamazaki US Pat.” hereinafter) in view of newly cited Tanaka US Pat. Publn. 2004/0067849 (“Tanaka US Pat. Publn.” hereinafter).

In Response filed December 5, 2007, applicants have already explained in detail the differences between the invention of the present claim 1 (“present invention” hereinafter) and Yamazaki US Pat.

As applicants previously stated, when a film formed from the coating liquid of the present invention and a film formed from the counterpart of Yamazaki US Pat. are compared, the former and the latter are significantly different in that, in the former, titanium oxide particles (A) and colloidal silica (B) are dispersed in the binder (C) formed of a hydrolysis-condensate of a titanium alkoxide and containing organic unreacted groups and that, in the latter, the matrix phase formed of essential  $\text{TiO}_2$  and optional metal oxide of silica, alumina or zirconia forms a continuous phase in which silica or alumina is dispersed (*see* col. 2, lines 26-43 of Yamazaki US Pat.).

In Yamazaki US Pat.,  $\text{TiO}_2$  constitutes a continuous matrix phase and is not dispersed in the form of particles. On this point, Yamazaki US Pat. is completely different from the present invention.

The above explanation can be tabulated as follows:

	Present invention	Yamazaki US Pat.
Disperse phase	(A) $\text{TiO}_2$ (B) Colloidal $\text{SiO}_2$	$\text{SiO}_2$ or $\text{Al}_2\text{O}_3$
Matrix phase	(C) Binder of hydrolysis-condensate of Ti alkoxide	Essential $\text{TiO}_2$ + optional $\text{SiO}_2$ , $\text{Al}_2\text{O}_3$ or $\text{ZrO}_2$

In the Office Action, page 5, penultimate paragraph, the Examiner comments that the rejected claim(s) do not state that titania ( $\text{TiO}_2$ ) is used as a disperse phase. Claim 1 is above amended to specify that  $\text{TiO}_2$  constitutes the disperse phase.

With regard to component (C) a binder formed of a hydrolysis-condensate of a titanium alkoxide and containing organic unreacted groups in the present invention, the Examiner states that such a binder (C) is disclosed in Tanaka US Pat. Publn. Assuming for the purpose of this response the Tanaka US Pat. Publn. discloses (C) a binder, the present invention could not have been arrived at by combining Yamazaki US Pat. with Tanaka US Pat. Publn. That is because the present invention differs from Yamazaki US Pat. in its disperse phase.

In summary, the combination of the Yamazaki and Tanaka references do not render obvious the claimed invention because all of the limitations of claim 1, the independent claim, are not fairly taught or suggested by the combination of the two patents. Moreover, claims depending from the independent claim are also not made obvious by the documents because the limitations of an independent claim are incorporated into their dependent claims. MPEP §2143.03.

Reconsideration and allowance are solicited. Should the examiner require further information, please contact the undersigned.

.. TANAKA et al.  
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Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By: 

Arthur R. Crawford  
Reg. No. 25,327

ARC:eaw  
901 North Glebe Road, 11th Floor  
Arlington, VA 22203-1808  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100